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DEPARTMENT OF THE INTERIOR

BULLETIN

OF THE

UNITED STATES

GEOLOGICAL SURVEY

No. 99

RECORD OF NORTH AMERICAN GEOLOGY FOR 1891

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WASHINGTON, D. C.

WASHINGTON, D. C., *December, 1892.*

DEPARTMENT OF THE INTERIOR

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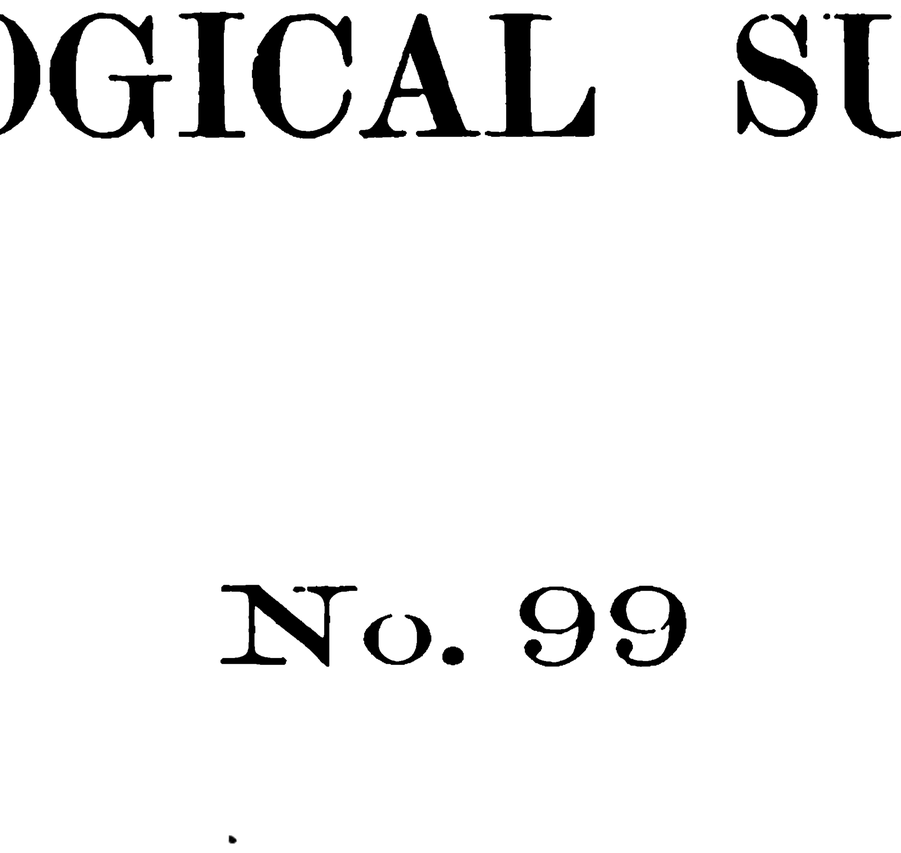
OF THE

UNITED STATES

GEOLOGICAL SURVEY

No. 99



WASHINGTON
GOVERNMENT PRINTING OFFICE
1892

UNITED STATES GEOLOGICAL SURVEY

J. W. POWELL, DIRECTOR.

RECORD

OF

NORTH AMERICAN GEOLOGY FOR 1891

BY

NELSON HORATIO DARTON

WASHINGTON
GOVERNMENT PRINTING OFFICE
1892

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RECORD OF NORTH AMERICAN GEOLOGY FOR 1891.

By Nelson Horatio Darton.

INTRODUCTORY.

This work is the continuation of the record for 1890,[1] and comprises publications received during the year 1891.

The literary scope of this record includes geologic publications printed in North America, and publications on North American geology wherever printed. Purely paleontologic or mineralogic papers are omitted.

The entries are comprised in the two following classes, all arranged in a single alphabetic sequence:

I. *Principal entries.*—Consisting of full titles of separate contributions classified by authors, together with an abbreviated reference to the containing publication and a short note descriptive of the geologic contents. Imprint dates are given only when other than 1891, and size of page when other than octavo. The extent of papers less than a page in length is indicated thus: ⅛ p., ¼ col., 3 lines.

II. *Subject references.*—Each consisting of a condensed title of paper, and the author's name for cross-reference to a principal entry. These are essentially index references, but they are entered under a limited number of headings, of which a classified key is given on the next page.

[1] Bulletin U. S. Geological Survey, No. 91. Washington, 1891.

CLASSIFIED KEY TO THE SUBJECT ENTRIES.

(1) GEOGRAPHIC SUBJECTS.

Alabama.
Alaska.
Arizona.
Arkansas.
Asia.
Australia.
California.
Canada (including all of British America).
Central America.
Colorado.
Connecticut.
Dakotas.
Delaware.
East Indies.
Europe.
Florida.
Georgia.
Hawaiian Islands.
Idaho.
Illinois.
Indiana.
Indian Territory (and "Public land strip").
Iowa.
Kansas.
Kentucky.
Louisiana.
Maine.
Maryland (including District of Columbia).
Massachusetts.
Mexico.
Michigan.
Minnesota.
Mississippi.
Missouri.
Montana.
Nebraska.
Nevada.

New Hampshire.
New Jersey.
New Mexico.
New York.
New Zealand.
North Carolina.
Ohio.
Oregon.
Pennsylvania.
Rhode Island.
South America.
South Carolina.
Tennessee.
Texas.
Utah.
Vermont.
Virginias.
Washington.
West Indies.
Wisconsin.
Wyoming.

(2) STRATIGRAPHIC SUBJECTS.

Archean and Algonkian, with sub-headings as follows:
- Eastern Canada.
- Lake Superior to Lake Huron region and western Canada.
- Mississippi river to Rocky mountains.
- New England.
- New York to Georgia.
- West of the Rocky mountains.
- Nomenclature.

Cambrian, with sub-headings as follows:
- Appalachian (Vermont to Alabama).
- Canada.
- Illinois.
- Lake Superior region.
- West of the Mississippi river.
- General and nomenclature.

Carboniferous (including Permian), with sub-headings as follows:
- Appalachians to Mississippi river.
- Canada.
- Mississippi river to Rocky mountains.
- Rocky mountains to Pacific coast.
- Virginia to Alabama.
- General and nomenclature.

Cretaceous, with sub-headings as follows:
- Atlantic coast region.
- Canada.
- Illinois.
- Kentucky.
- Mexico.
- Mississippi river to Rocky mountains.
- Pacific coast region.
- Nomenclature.

Devonian, with sub-headings as follows:
- Appalachians (New York to Alabama).
- Appalachians to Mississippi river.
- Canada.
- West of the Mississippi river.
- General and nomenclature.

Jura-Trias, with sub-headings as follows:
- Mississippi river to Rocky mountains.
- Newark formation (Nova Scotia to Virginia).
- West of the Rocky mountains.
- West Canada.
- General and nomenclature.

Pleistocene, with sub-headings as follows:
- Alaska.
- Appalachians to Mississippi basin.
- Atlantic coast region.
- Central America.
- General.
- Great lakes region and Eastern Canada.
- Mississippi basin to Rocky mountains.
- Rocky mountains to Pacific coast.
- Western Canada.

Silurian, with sub-headings as follows:
- Appalachians (Vermont to Alabama).
- Appalachians to Mississippi river.
- Canada.
- West of Mississippi river.
- Nomenclature.

Tertiary, with sub-headings as follows:
- Alaska.
- Atlantic coastal plain.
- Canada.
- Gulf states (Florida to Texas, and Arkansas).
- Illinois.
- Kentucky.

Mississippi river to Rocky mountains (north of Arkansas).
Pacific coast region.
Tennessee.
General and nomenclature.

(3) OTHER SUBJECTS.

Geologic philosophy, with sub-headings as follows:
Deformation.
Petrology.
Glaciology.
Ore deposits.
Physiographic geology.
Miscellaneous.

Petrography.

RECORD.

A.

DAMS, Frank D. On some granites from British Columbia and the adjacent parts of Alaska and the Yukon district.

Canadian Record of Science, vol. 4, pp. 344–358.

Description of their petrography and discussion of the origin of certain secondary minerals which they contain.

—— Notes to accompany a tabulation of the igneous rocks, based on the system of Professor H. Rosenbush.

Canadian Record of Science, vol. 4, pp. 463–469, pl.

Petrographic. Accompanied by a folded table.

—— [Summary report on surveys in the St. Maurice district, eastern townships.]

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Jabama. Appomattox formation, McGEE.

Coal measures of plateau region, McCALLEY.

Coal measures of Blount county, GIBSON.

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Cretaceous stratigraphy, WHITE, C. A.

Cretaceous of North America, WHITE, C. A.

Dates of origin of certain topographic forms, DAVIS.

[Flora of Tuscaloosa formation], FONTAINE.

Map of Cahaba coal field, McCALLEY.

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Explorations in Alaska, RUSSELL, I. C.

Fossil plants from near Mount St. Elias, KNOWLTON.

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—— Supposed Trenton fossil fish.

Am. Geologist, vol. 8, pp. 177–180.

Review of the statements of C. D. Walcott on the discovery of fossil fish in the Trenton of Colorado to the Geological Society of America, in August, 1891.

Arizona. Analysis of sandstone, CHATARD.
Cambrian of North America, WALCOTT.
Devonian and Carboniferous, correlation, WILLIAMS, H. S.
Fauna of Lower Cambrian, WALCOTT.
Manganese deposits, PENROSE.
Meteoric iron locality, FOOTE.
Stones for building, MERRILL, G. P.

Arkansas. Appomattox formation, MCGEE.
Bauxite, BRANNER.
Basic dikes outside of syenite areas, KEMP.
Comanche series of Texas—Arkansas series, HILL.
Cretaceous of North America, WHITE, C. A.
Crowley's Ridge, CALL. SALISBURY. BRANNER.
Devonian and Carboniferous, correlation, WILLIAMS, H. S.
Fayetteville–Huntsville section, HARRIS.
Geology of Washington county, SIMONDS.
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Igneous rocks of Arkansas, WILLIAMS, J. F.
Introduction [Washington county], BRANNER.

Arkansas—Continued.
Manganese deposits, PENROSE.
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Relationship of Pleistocene to pre-Pleistocene, CHAMBERLIN and SALISBURY.
Stones for building, MERRILL, G. P.
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Tertiary silicified woods, CALL.
Titanic oxide [in soils], DUNNINGTON.
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[BAILEY, L. W.] [Summary report on work in northern New Brunswick and Quebec.]
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A discussion of physical values.

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BECKER, George H.—Continued.

——Notes on the early Cretaceous of California and Oregon.

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—— Introduction.

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Includes a stratigraphic column of the formations of Washington county, and references to the Eureka (Devonian?) shale and Lower Silurian sandstone exposures.

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Amador county, BROWN.
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Antiquities from Tuolumne Table mountain, BECKER.
Analyses of rocks, CHATARD.
Asphaltum mine, Ventura county, HILGARD.
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Colusa county, GOODYEAR.
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Lake county, GOODYEAR.

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Lassen county, PRESTON.
Los Angeles county, PRESTON.
Manganese deposits, PENROSE.
Marion county, GOODYEAR.
Mariposa county, PRESTON.
Mendocino county, GOODYEAR.
Merced county, WATTS.
Mining of gold ores, HAMMOND.
Modoc county, PRESTON.
Mohawk lake beds, TURNER.
Monterey county, ANGEL.
Mount Diablo, TURNER.
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Nevada county, HOBSON.
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Pico Cañon oil field, NORTH.
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Searle's borax marsh, DE GROOT.
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Structure of portion of the Sierra Nevada, BECKER.
San Mateo county, WATTS.
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Stones for building, MERRILL, G. P

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Titanic oxide in soils, DUNNINGTON.
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West Kootanie district, DAWSON, G. M.
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Fossil plants from Similkameen valley; DAWSON, J. W.
Fossils from Silurian of Saskatchewan district, WHITEAVES.
Genesis of manganese deposits, New Brunswick, WHITTLE.
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Geology of Steep rock lake, Ontario, SMYTH.
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Geology of Selkirk range, DAWSON, G. M. WALCOTT.
Glaciation of Great Plains region, DAWSON, G. M.
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High level shores of Great Lakes and their deformation, SPENCER.
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Manganese deposits, PENROSE.
Metallic iron in Huronian on Lake Huron, HOFFMAN.
Mineral resources of Quebec, ELLS.
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Petrographic differentiation in dikes of Rainy lake region, LAWSON.

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New horizon in St. John group, MATTHEW.
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—— On a leaf-bearing terrane in the Loup fork. [Near Alpine in the "Public Lands."]

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—— Further notes on the Cheyenne sandstone and Neocomian shales.

Am. Geologist, vol. 7, pp. 179–181.

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Am. Jour. Sci., 3d series, vol. 41, pp. 432–434.

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CUMMINS, W. F.—Continued.
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Am. Jour. Sci., 3d series, vol. 42, pp. 79–110, pls. 2, 7.
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DANA, James D.—Continued.
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Am. Jour. Sci., 3d series, vol. 42, pp. 439–447, pl. 16.
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—— Geology of sedimentary rocks. Washington sheet, Maryland, District of Columbia, Virginia. U. S. Geological Survey.
Guide to Washington, prepared for the International Congress of Geologists, Fifth Session, Washington. In back. Folded, colored geologic map, with geology of crystalline rocks, by G. H. Williams.

—— Clastic formations of Washington.
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Am. Jour. Sci., 3d series, vol. 41, pp. 102–105.

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—— Record of a deep well at Lake Worth, southern Florida.

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Am. Naturalist, vol. 25, p. 910, ½ p.

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—— On a jointed earth-auger for geological explorations in soft deposits.

Am. Geologist, vol 7, pp. 117–119.

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Engineering and Mining Jour., vol. 51, pp. 628–629, 4°.

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Engineering and Mining Jour., vol. 52, p. 502, ⅔ col. 4°.

Extracts from a paper with this title by M. A. Strahan, who holds that the phosphoric acid in the deposits was mainly derived from fishes. Suggests that the Florida phosphates were similarly derived.

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DAVIS, William M.—Continued.

A preliminary analysis of the topographic development of the Atlantic slope, with a brief chapter on genetic topographic classification in general, and comments on the representation of dates of topographic forms by colored maps.

—— Introductory statement. Two belts of fossiliferous black shale in the Triassic formation in Connecticut.

Geol. Soc. Am., Bull., vol. 2, pp. 415–424, 430.

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Am. Jour. Sci., 3d series, vol. 42, pp. 72–73.

An account of the relations about Meriden, in which are discussed the origin of the deposits, formation of the trap sheets, deformation, topographic expression of structure, and the structure and stratigraphy in the Meriden region. Discussed by B. K. Emerson, p. 430.

—— [Age and extent of the overthrusts in the southern Appalachians.]

Geol. Soc. Am., Bull., vol. 2, pp. 153–154, ½ p.

Abstract, Am. Geologist, vol. 7, p. 262, ⅛ p.

In discussion of paper by C. W. Hayes "The overthrust faults of the southern Appalachians." Presentation of evidence correlating them with the post-Newark deformation and suggestion of means for determinining their original extent.

—— The physical geography of southern New England.

Johns Hopkins Univ., Circulars, vol. 10, No. 87, pp. 78–79, ⅛ p., 4°.

An analysis of the development of the topography of the region from the Cretaceous to the present time.

—— The Triassic sandstone of the Connecticut Valley.

Johns Hopkins Univ., Circulars, vol. 10, No. 87, p. 79, ½ col., 4°.

Description of a model illustrating the history of the region from the Triassic to the beginning of the Pleistocene.

—— The lost volcanoes of Connecticut.

Popular Science Monthly, vol. 40, pp. 221–235.

Account of relations and history of igneous members of the Newark formation in the Connecticut valley, and description of a model exhibiting the development of the structure of the region.

—— Was Lake Iroquois an arm of the sea?

Am. Geologist, vol. 7, pp. 139–140.

Reviewed by J. W. Spencer, ibid., pp. 266–267, ⅔ p.

Discussion of the conditions attending the presence of Lake Iroquois, especially in connection with its outlet.

—— Structure and origin of glacial sand plains.

Am. Geologist, vol. 7, p. 141, ¼ p.

Abstract of paper described in Record for 1890.

DAWSON, George M. On the later physiographical geology of the Rocky mountain region in Canada with spe-

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Texas, Geol. Survey, Second Annual Report, pp. 303–317.

Description of stratigraphy and economic resources.

—— [Iron ore district of east Texas] Houston county.

Texas, Geol. Survey, Second Annual Report, pp. 318–326.

Notes on stratigraphy and economic resources and analyses of soils.

—— Important results of the Texas survey.

Am. Geologist, vol. 7, pp. 267–269.

DUMBLE, E. T.—Continued.

Includes account of the relations of the Triassic to Carboniferous in north Texas as determined by Cummins, and of new light on Cretaceous stratigraphy in western Texas due to Streeruwitz.

DUNNINGTON, F. P. Distribution of titanic oxide upon the surface of the earth.

Am. Jour. Sci., 3d series, vol. 42, pp. 491–495.

Gives analyses of soils from Virginia, West Virginia, Maryland, North Carolina, South Carolina, Indiana, Tennessee, Alabama, Mississippi, Arkansas, Missouri, Montana, Nevada, California, and from Europe, Asia, and Oceanica.

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EAKINS, L. G. Five Cherokee limestones. [Analyses].

U. S. Geol. Survey, Bull. No. 78, p. 125, ½ p.

From the lead-zinc region of southwestern Missouri.

East Indies. Permian, Triassic, and Jurassic of Timor and Rotti, ROTHPLETZ.

EDWARDS, Arthur M. Report of the examination by means of the microscope of specimens of infusorial earths of the Pacific Coast of the United States.

Am. Jour. Sci., 3d series, vol. 42, pp. 369–385.

Includes notes on the localities and discussion of the stratigraphic distribution of the forms. In a supplemental note considers the age of the "Great Basin" deposits.

ELDRIDGE, G. H. The Florence oil fields, Colorado.

Engineering and Mining Jour., vol. 52, p. 422, ⅛ col., 4°.

Abstract of paper read to Am. Inst. of Mining Engineers, October, 1891.

Reference to stratigraphic position and depths of the oil-bearing strata.

ELLS, R. W. Report on the mineral resources of the Province of Quebec.

Canada, Geol. Survey, Reports, vol. 4. new series, Report K. 159 pages, 1890.

A brief sketch of geology in opening chapter and incidental geologic notes for some of the localities.

—— Asbestus; its history, mode of occurrence, and uses.

Ottawa Naturalist, vol. 4, pp. 201–225.

Includes references to geologic conditions under which it occurs.

[——] [Summary report on survey of region lying south of the Grand Trunk Railway between Acton and Richmond to the Vermont boundary.]

Canada, Geol. Survey, Reports, vol. 4, new series, Report A, pp. 33–34, 1890.

ELLS, T. W.—Continued.

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Abstracts, Am. Geologist, vol. 8, p. 185, ¼ p.

Am. Naturalist, vol. 25, p. 910, ⅓ p.

Points out the character of the members, refers briefly to structural relations, and discusses the currents and conditions of deposition indicated by the deposits. Accompanied by a geologic map of the Massachusetts area.

—— [Arkose beds in the Newark formation and relations of the rocks, in the Douglas region in central Massachusetts.]

Geol. Soc. Am., Bull., vol. 2, p. 223, ¼ p.

In discussion of paper by R. Pumpelly: "The relation of secular rock disintegration to certain transitional crystalline schists."

—— [Stratigraphic position of fossil-bearing beds in the Newark formation in Massachusetts.]

Geol. Soc. Am., Bull., vol. 2, p. 430, 4 lines.

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HILL, Robert T.—Continued.

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—— [On the fauna of the "Shasta group" and of the supposed Trias from the Mineral King district.]

WHITE, C. A.—Continued.

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In discussion of paper by G. F. Becker: "Notes on the early Cretaceous of California and Oregon."

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Geol. Soc. Am., Bull., vol. 2, pp. 525–526.

In discussion of paper by R. T. Hill: "The Comanche series of the Texas-Arkansas region."

—— [Remarks on Cretaceous stratigraphy in Alabama.]

Geol. Soc. Am., Bull., vol. 2, p. 606, ½ p.

In discussion of paper by D. W. Langdon: "Variations in the Cretaceous and Tertiary strata of Alabama."

—— On certain Mesozoic fossils from the islands of St. Paul's and St. Peter's, in the Straits of Magellen.

U. S. National Mus. Proc., vol. 13, pp. 13–14, pls. 2, 3.

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Descriptions of the thickness, character, and extent of the various formations, the structure of the region, and the distribution of the coal beds. Discusses the age and correlation of some of the formations.

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Canadian Record of Science, vol. 4, pp. 293–303, pl. 3.

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Am. Geologist, vol. 7, pp. 183–187.

Description of the two bars in the harbor and an elevated beach, with comments on their history, and notes on the relations of the Newark and Carboniferous formations of the vicinity.

—— Genesis of the manganese deposits of Quaco, New Brunswick.

Boston Soc. Nat. Hist., Proc., vol. 25, pp. 253–258.

Includes an account of their geologic relations.

WILLIAMS, George Huntington. The petrography and structure of the Piedmont plateau in Maryland.

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Abstracts, Am. Geologist, vol. 8, pp. 330–331, ½ p.; Am. Naturalist, vol. 25, pp. 909–910, ⅓ p.

WILLIAMS, Geo. Huntington—Cont'd.

Descriptions of the rocks and discussion of their relations and history and of the structure of the region. Illustrated by a geologic map.

—— The silicified glass-breccia of Vermillion river, Sudbury district.

Geol. Soc. Am., Bull., vol. 2, pp. 138-140.

Abstracts, Am. Geologist, vol. 7, p. 261, 3 lines; Am. Naturalist, vol. 25, pp. 1005-1006, ¼ p.

Petrographic description and discussion of its nature.

—— [On transition of crystalline and semi-crystalline rocks in eastern Maryland.]

Geol. Soc. Am., Bull., vol. 2, p. 223, ¼ p.

In discussion of paper by R. Pumpelly: "The relation of secular rock disintegration to certain transitional crystalline schists."

—— [Fossils in the Newark formation of Frederick county, Maryland.]

Geol. Soc. Am., Bull., vol. 2, p. 318, ⅛ p.

Statement of localities and of the general nature of the fossils.

—— Anglesite, cerussite and sulphur from the Mountain View lead mine, near Union Bridge, Carroll county, Maryland.

Johns Hopkins Univ. Circulars, vol. 10, pp. 73–75, No. 87, 4°.

Includes a brief prefatory account of the geology of the vicinity.

—— Geology of crystalline rocks. Washington sheet. Maryland, District of Columbia, Virginia. U. S. Geological Survey.

Guide to Washington, prepared for the International Congress of Geologists, Fifth Session, Washington. In back.

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—— The work on the crystalline rocks of Maryland.

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Abstract, Ib., pp. 31-32.

Account of scope of the work and statement of results.

WILLIAMS, Geo. Huntington—Cont'd.

—— The geological excursion by university students across the Appalachians in May, 1891.

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Geologic notes from Baltimore via Washington to the Cumberland plateau, including Harper's Ferry, Hancock, Cumberland, and the coal mines at Lonaconing.

—— The greenstone schist areas of the Menominee and Marquette regions of Michigan.

Am. Naturalist, vol. 25, pp. 572–574.

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WILLIAMS, Henry Shaler. Correlation papers. Devonian and Carboniferous, U. S. Geological Survey, Bull. No. 80, 279 pages. Washington.

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—— What is the Carboniferous system? [Abstract.]

Geol. Soc. Am., Bull., vol. 2, pp. 16–20.

Gives the early history of the application of the name, and a summary of the characteristics and relations of the formation in the Pennine range—its type locality. Discusses the status of the name and correlation of the American Carboniferous with the Pennine Carboniferous.

WILLIAMS, J. Francis. The igneous rocks of Arkansas.

Arkansas, Geol. Survey, Report for 1891, vol. 2, pp. 1–391, 429–457, 22 plates, 8 maps.

Descriptions of the relations and petrography of the igneous and associated rocks in the several districts. Accompanied by folded, colored geologic maps.

—— **KEMP**, J. F., and. Tabulation of the dikes of igneous rocks of Arkansas.

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Table in which locality, strike, dip, wall rock, and petrographic peculiarities are listed.

WILLIAMS, J. Lawton. On cycles of sedimentation.

Am. Geologist, vol. 8, pp. 315–324.

A discussion of the nature of the conditions to which they are due, especially their relation to earth-crust movements.

WILLIS, Bailey. Graphic field notes for areal geology.

Geol. Soc. Am., Bull., vol. 2, pp. 177–188, pl. 6.

School of Mines Quart., vol. 12, pp. 319–333.

WILLIS, Bailey—Continued.

—— Report, Appalachian division.

U. S. Geol. Survey, 10th Report, J. W. Powell, pp. 119–122, 1890.

Includes some general statements rgarding Appalachian stratigraphy and the mechanism of faults.

—— [On the relations existing between faulting and the arrangement of strata in the vertical column, in the Appalachian region.]

Geol. Soc. Am., Bull., vol. 2., p. 154, ¼ p.

In discussion of paper by C. W. Hayes: "The overthrust faults of the Southern Appalachians." Points out certain relations which determine the nature and distribution of faults in the Appalachians.

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Kansas Acad. Sci., Trans., vol. 12, p. 100, ⅔ p., 1890.

Brief statement of the nature and size of its component organisms.

WINCHELL, Alexander. A last word with the Huronian.

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Abstracts, Am. Naturalist, vol. 25, pp. 651-652; Am. Geologist, vol. 7, p. 261, ½ p.

Review of the original application of the name, discussion of the structual and lithological discordance between the two systems which it comprised in the various regions, account of personal observation in the Echo Lake region and conclusions regarding the restriction of the term "Huronian."

—— American opinion on the older rocks.

Minnesota, Geol. Survey, 18th Report, pp. 65-219 [date?].

Review of writings of E. Emmons, D. Houghton, E. Hitchcock, H. D. Rogers, J. Hall, W. E. Logan, J. D. Whitney, T. S. Hunt, G. F. Matthew, C. H. Hitchcock, T. B. Brooks, W. H. Winchell, C Rominger, R. D. Irving, A. C. Lawson, with citations from some others, on Archean, Algonkian, and Cambrian of North America.

—— Recent observations on some Canadian rocks.

Am. Naturalist, vol. 25, pp. 365–366, ¼ p.

Abstract of paper described in Record for 1890.

WINCHELL, Horace V. Geological age of the Saganaga granite.

Am. Jour. Sci., 3d series, vol. 41, pp. 386–390.

Discussion of its relations to surrounding rocks, the significance of the occurrence of an included band of chalcedonic silica and the bearing of the age of the granite on the equivalency and history of certain other rocks in northern Minnesota.

——, **WINCHELL**, N. H., and. The iron ores of Minnesota, their geology, discovery, development, qualities and origin, and comparison with those of other iron districts. Minnesota, Geol. Survey, Bull. No. 6, 430 pages, 44 plates, including three folded maps, Minneapolis.

Abstracts, Engineering and Mining Jour., vol. 52, p. 3, ⅔ p. 4°; Am. Geologist, vol. 7, pp. 370-374.

Includes an extended description of their characters and geologic relations, a comparison of the ores of Minnesota with those of Michigan, Wisconsin, and the "Taconic" region and a discussion of their age and origin and of the origin of iron ores in general, with a bibliography of the origin of iron ores. Illustrated by a colored geologic map and with plates of microscopic rock sections. In appendices A, B, C, are republished "On a possible chemical origin of the ores of the Keewatkin in Minnesota" and "The Taconic iron ores of Minnesota and western New England," by N. H. and H. V. Winchell, and "The Eastern equivalents of the Minnesota iron ores," by N. H. Winchell.

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WINCHELL, N. H. Record of field observations.

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Mesabi iron range; about Tower; at Ely; Pokegama Falls and eastward; gold in the Keewatin in northern part of the state; crystalline rocks of Minnesota valley; at Duluth; on relations and age of the gabbro of the typical Huronian, and on the rocks about Sudbury, Ontario.

—— The eastern equivalents of the Minnesota iron ores.

Minnesota, Geol. Survey, Bull. No. 6, pp. 411–419

Read to Minnesota Academy of Science, Oct. 7, 1890.

Comparison of Minnesota ore deposits with the iron deposits of other regions, especially those of New York and western New England, with comments on geologic relations and nomenclature in the "Taconic" region.

—— What constitutes the Taconic mountains? [Abstract.]

Am. Assoc. Adv. Science, Proc., vol. 39, pp. 246–247, ½ p.

—— and **WINCHELL**, H. V. The iron ores of Minnesota, their geology, discovery, development, qualities, and

WINCHELL, N. H. and H. V.—Cont'd.

origin, and comparison with those of other iron districts.

Minnesota, Geol. Survey, Bull. No. 6, 430 pages, 44 plates, including three folded maps Minneapolis.

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Includes an extended description of their characters and geologic relations, a comparison of the ores of Minnesota with those of Michigan, Wisconsin, and the "Taconic" region, and a discussion of their age and origin and of the origin of iron ores in general, with a bibliography of the origin of iron ores. Illustrated by a colored geologic map and with plates of microscopic rock-sections. In appendices A, B, C, are republished "On a possible chemical origin of the ores of the Keewatin in Minnesota" and "The Taconic iron ores of Minnesota and western New England", by N. H. and H. V. Winchell, and "The eastern equivalents of the Minnesota iron ores", by N. H. Winchell.

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WINSLOW, Arthur. The geotectonic and physiographic geology of western Arkansas.

Geol. Soc. Am., Bull., vol. 2, pp. 225–242, pl. 8.

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Description of physiography and structure, and discussion of the character, age, and cause of the flexing, the genesis of the physiography, and the age of the rocks. Discussed by T. M. Reade, Am. Geologist, vol. 8, pp. 275–287.

—— Geological survey of Missouri. Biennial Report of the State Geologist transmitted by the Bureau of Geology and Mines to the General Assembly, 53 pages, 2 plates.

Contains a history of geologic exploration in the state.

—— Remarks on the construction of topographic maps for geologic purposes. [Abstract.]

Am. Assoc. Adv. Science, Proc., vol. 39, pp. 252–255.

Wisconsin.

A last word with the Huronian, WINCHELL, A.

Wisconsin—Continued.

American opinion on the older rocks, WINCHELL, A.

Altitude of United States during glaical period, CHAMBERLIN.

Cambrian of North America, WALCOTT.

Conditions controlling artesian wells, HALL, C. W.

Iron ores of Minnesota, WINCHELL, N. H. and H. V.

Lake Superior stratigraphy, LAWSON. VAN HISE.

Northern extension of pre-Pleistocene gravels, SALISBURY.

Penokee iron series, IRVING and VAN HISE.

Rock feature at Appleton, CRAMER.

Stones for building, MERRILL, G. P.

WOLFF, J. E. On the lower Cambrian age of the Stockridge limestone.

Geol. Soc. Am., Bull., vol. 2, pp. 331–337.

Abstracts, Am. Geologist, vol. 8, p. 117, ½ p.; **Am. Jour., Sci.,** 3d series, vol. 41, p. 435, ¼ p.

Description of the relations in the vicinity of Rutland, Vermont, announcement of the discovery of Cambrian fossils in the limestone and discussion of the structure and age of the formations in that district. Preceded by a review of previous opinions. Discussed by J. F. James, p. 338.

—— Metamorphism of clastic feldspar in conglomerate schist.

Harvard Coll., Mus. Comp. Zool., Bull., vol. 17, pp. 173–184, 2 pls.

Description of petrography of specimens from Green Mountain region in New England, with a brief account of the relations of the rocks.

—— On some occurrences of ottrelite and ilmenite schist in New England.

Am. Naturalist, vol. 25, p. 1005, ⅓ p.

Abstract of paper described in Record for 1890.

WOOLMAN, Lewis. Artesian wells and water-bearing horizons of southern New Jersey [with a "note on the extension southward of diatomaceous clays and the occurrence there of flowing artesian wells."]

New Jersey, Geol. Survey, Report for 1890, pp. 269–276.

Discussion of the structure and stratigraphy of the water bearing strata in southern New Jersey and references to occurrences of the diatomaceous clays of the series in outcrops and wells at various points in Maryland and Virginia.

WORTHEN, A. H. Approximate geological map of the state of Illinois reduced from the map published in 1875,

WORTHEN, A. H.—Continued.

with volume 6, Geological Survey of Illinois.

Illinois, Geol. Survey, Geology and Paleontology, vol. 8, plate at end.

Black and white map, scale 32 miles to the inch.

—— Drift deposits of Illinois.

Illinois, Geol. Survey, Geology and Paleontology, vol. 8, pp. 1–24, 1890.

Abstract, **Geol. Magazine,** 3d decade, vol. 8, p. 322, ⅓ p.

Account of the character and relations of the drifts and the occurrence of pre-Pleistocene fossils, with remarks on the Cretaceous to Pleistocene history.

—— Economical geology.

Illinois, Geol. Survey, Geology and Paleontology, vol. 8, pp. 25–67, 1890.

Account of deep borings in various parts of the state, mainly in the coal region, with comments on the stratigraphy of the beds penetrated.

WRIGHT, G. Frederick. Mr. Cushing and the Muir glacier.

Am. Geologist, vol. 8, pp. 330–331.

Discusses the conditions under which forests were buried on the west side of the inlet.

—— Additional notes concerning the Nampa image.

Boston Soc. Nat. Hist., Proc., vol. 25, pp. 242–246.

Includes a discussion of the age of the beds and the source and relations of the lava beds of the region.

—— Additional notes concerning the Nampa image.

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WRIGHT, G. Frederick—Continued.

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—— Man and the glacial period.

Popular Science Monthly, vol. 39, pp. 314–319.

From supplementary notes to new edition of "The Ice Age in North America."

References to discoveries of human implements at Newcomerstown, Ohio; Nampa, Idaho, and Bald mountain, California, with notes on the geological conditions under which they occur.

—— The glacial grooves on Kelly's island to be preserved.

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Includes brief reference to the character of the grooves and to the conditions of glaciation in the region.

WYATT, Francis. The phosphates of America, 187 pages, New York.

Not seen.

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Cretaceous of North America, WHITE, C. A.

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Minerals in spherulites from Glade creek. IDDINGS and PENFIELD.

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Spherulite crystallization, IDDINGS.

Stones for building, MERRILL, G. P.